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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,368	02/12/2004	Andrew J. Ritz	MS306248.1/MSFTP553US	5086
27195 7590 06/21/2007 AMIN, TUROCY & CALVIN, LLP 24TH FLOOR, NATIONAL CITY CENTER 1900 EAST NINTH STREET CLEVELAND, OH 44114			EXAMINER LEE, CHUN KUAN	
			ART UNIT 2181	PAPER NUMBER
			MAIL DATE 06/21/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Interview Summary</b>	Application No.	Applicant(s)	
	10/777,368	RITZ ET AL.	
	Examiner	Art Unit	
	Chun-Kuan (Mike) Lee	2181	

All participants (applicant, applicant's representative, PTO personnel):

(1) Donald Spraks (SPE).

(3) Chun-Kuan (Mike) Lee (Examiner).

(2) Alford Kindred (SPE).

(4) Nilesh S. Amin (Attorney Reg # 58,407).

Date of Interview: 14 June 2007.

Type: a) ☒ Telephonic b) ☐ Video Conference  
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.  
If Yes, brief description: \_\_\_\_\_.

Claim(s) discussed: 1.

Identification of prior art discussed: Safranek et al. (US Pub.: 2004/0193755) and Kondratiev et al. (US Patent 6,922,740).

Agreement with respect to the claims f) ☐ was reached. g) ☒ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Please see Continuation Sheet below.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

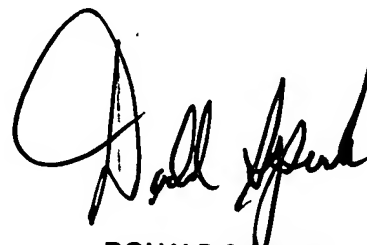
Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

\_\_\_\_\_  
Examiner's signature, if required

The interview mainly discussed that the independent claim 1, currently rejected under 35 U.S.C. 103(a), wherein the applicant argued that the combination of references does not teach/suggest each and every claimed limitations.

The applicant argued that the combination of references do not teach/suggest the claimed access attribute field (i.e. single field) and the claimed disallowing of access, because Sanfranek (primary reference) does not teach/suggest the claimed source, memory and access type control and Kondratiev (secondary reference) does not teach/suggest the claimed access attribute field (i.e. single field) and disallow access type control. Additionally, applicant clarified that Kondratiev does not teach the access attribute field (i.e. single field), because Kondratiev teaches having more than one field rather than a single field (access attribute field), and Kondratiev teaches the allow access type control (e.g. read, write) but does not teach the disallow access type control.

The examiner attempted to clarified his position in response to applicant's arguments and no agreement is reached.

A handwritten signature in black ink, appearing to read "Donald Sparks", written in a cursive style.

**DONALD SPARKS**  
**SUPERVISORY PATENT EXAMINER**

## AMIN, TUROCY &amp; CALVIN, LLP

FACSIMILE

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Date: 6/11/07

TO: Examiner Robinson-Boyce

FACSIMILE NO.: 571-273-0671

FROM: Nilesh S. Amin  
AMIN, TUROCY & CALVIN, LLP  
24<sup>th</sup> Floor, National City Center  
1900 East 9<sup>th</sup> Street  
Cleveland, Ohio 44114

Telephone: (216) 696-8730  
Facsimile: (216) 696-8731

No. of Pages Including Cover 11

RE: Application Serial No. 10/777,368  
Filed: February 12, 2004

Dear Examiner Robinson-Boyce,

As discussed in our telephone conversation on Monday, 6/11, I am faxing you a draft version of my Reply to your Office Action issued on March 30, 2007 for application number 10/777,368. I would like to set up an interview to discuss this case and clarify my understanding of your interpretation of the prior art with respect to the recited claims. Please call me at 310-428-4640 at your earliest convenience to let me know when you are available to discuss this case.

Regards,

Nilesh Amin  
Reg. No. 58,407

**DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT****PATENT****MS306248.01/MSFTP553US****CERTIFICATE OF TRANSMISSION**

I hereby certify that this correspondence (along with any paper referred to as being attached or enclosed) is being submitted via the USPTO EFS Filing System on the date shown below to **Mail Stop Amendment**, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Date: \_\_\_\_\_

\_\_\_\_\_  
**/Jessica Sexton/**  
Jessica Sexton**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re patent application of:

Applicant(s): Andrew Ritz, *et al.*

Examiner: Chun Kuan Lee

Serial No: 10/777,368

Art Unit: 2181

Filing Date: February 12, 2004

Title: SYSTEM AND METHOD FOR DETECTING DMA-GENERATED MEMORY  
CORRUPTION IN A PCI EXPRESS BUS SYSTEM

**Mail Stop Amendment**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**

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**DRAFT REPLY TO OFFICE ACTION DATED MARCH 30, 2007**

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Dear Sir:

Favorable reconsideration of the above-identified patent application is respectfully requested in view of the amendments and comments below.

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**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions of claims in the application:

**Listing of Claims:**

1. (Previously Presented) A direct memory access memory corruption detection system embodied on a computer readable medium comprising the following computer executable components:

an access data store that stores access information associated with memory, the access data store comprising an access table, the access table comprising a source identifier field, a memory address field and an access attribute field, the access attribute field distinguishes from amongst two or more of read, read and write, write, and no access to indicate access for a combination of source and memory range identified in the source identifier and memory address fields; and.

a memory controller that employs the access information to determine whether a requested direct memory access is permitted and rejects the requested direct memory access if it is not permitted.

2. (Previously Presented) The direct memory access memory corruption detection system of claim 1, the access information comprising a direct memory access request.

3. (Previously Presented) The direct memory access memory corruption detection system of claim 2, the direct memory access request comprising a transaction type.

4. (Previously Presented) The direct memory access memory corruption detection system of claim 1, the direct memory access request comprising a source identifier.

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5. (Original) The direct memory access memory corruption detection system of claim 4, the source identifier being associated with a device.
6. (Cancelled).
7. (Original) The direct memory access memory corruption detection system of claim 1, the access information comprising at least one permitted memory address.
8. (Original) The direct memory access memory corruption detection system of claim 1, the access information comprising at least one disallowed memory address.
9. (Original) The direct memory access memory corruption detection system of claim 1, the request comprising a read action or a write action.
10. (Previously Presented) The direct memory access memory corruption detection system of claim 1, the request comprising a peripheral component interconnect express bus transaction.
11. (Previously Presented) The direct memory access memory corruption detection system of claim 1, the memory controller coupled to a device through a peripheral component interconnect express bus, the device providing the request.
12. (Original) The direct memory access memory corruption detection system of claim 1, the memory controller further providing error information, if the requested direct memory access is not permitted.
13. (Original) The direct memory access memory corruption detection system of claim 12, the error information comprising source information associated with the requested direct memory access[0].

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14. (Previously Presented) A direct memory access memory corruption detection system embodied on a computer readable medium comprising the following computer executable components:

a memory controller that includes an access table store that stores access information associated with memory, the access information comprising at least one source identifier, at least one memory address and at least one access attribute, the at least one access attribute distinguishes from amongst two or more of read, read and write, write, and no access to indicate access for a combination of source and memory range identified by the at least one source identifier and at least one memory address, the memory controller employs the access information to determine whether a requested direct memory access is permitted and rejects the requested direct memory access if it is not permitted; and,

a device driver that programs a device for a direct memory access operation, and, provides the access information to the memory controller *via* a direct memory access application interface.

15. (Previously Presented) The direct memory access memory corruption detection system of claim 14, the device driver providing access information comprising a range of physical memory, a source identifier, and, an access attribute.

16. (Previously Presented) The direct memory access memory corruption detection system of claim 14, the request comprising a peripheral component interconnect express bus transaction.

17. (Previously Presented) A method that facilitates detection of direct memory access memory corruption comprising:



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receiving a request for a direct memory access transaction, the request comprising a source identifier, at least one memory address, and a transaction access attribute; and,

determining whether the request is permitted based, at least in part, stored access information and the request, the stored access information comprising at least one source identifier, at least one memory address and at least one access attribute, the at least one access attribute distinguishes from amongst two or more of read, read and write, write, and no access to indicate access for a combination of source and memory range identified by the at least one source identifier and at least one memory address; and

rejecting the requested direct memory access if it is not permitted.

18. (Cancelled)

19. (Original) The method of claim 17, storing access information in a access data store, the access information comprising a source identifier, at least one memory address and an access attribute.

20. (Original) A computer readable medium having stored thereon computer executable instructions for carrying out the method of claim 17.

21. (Previously Presented) A data packet transmitted between two or more components embodied on a computer readable medium that facilitates detection of direct memory access memory corruption, the data packet comprising:

a data field comprising a corrected platform error event, the corrected platform error event being based, at least in part, upon a determination that a requested direct memory access is not permitted, the determination being based, at least in part, upon access information stored in an access table and the requested direct memory access, the access information comprising at least one source identifier, at least one memory address and at least one access attribute, the at least one access attribute distinguishes from amongst two or more of read, read and write, write,

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and no access to indicate access for a combination of source and memory range identified by the at least one source identifier and at least one memory address.

22. (Previously Presented) A direct memory access memory corruption detection system embodied on a computer readable medium comprising:

means for storing access information associated with memory;

means for receiving a request for a direct memory access;

means for determining whether a requested direct memory access is permitted based, at least in part, upon the stored access information and the request, the stored access information comprising at least one source identifier, at least one memory address and at least one access attribute, the at least one access attribute distinguishes from amongst two or more of read, read and write, write, and no access to indicate access for a combination of source and memory range identified by the at least one source identifier and at least one memory address; and,

means for rejecting the requested direct memory access if it is not permitted.

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**REMARKS**

Claims 1-5, 7-17, 19-22 are currently pending in the subject application and are presently under consideration.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

**I. Objection of Claim 13**

Claim 13 is objected to because of the following informalities: in claim 13, line 3, "[0]" at the end of the claim should be deleted. The "[0]" appears to be an artifact that was introduced during a conversion from a MSWord document to a pdf file. This artifact has been removed from the claim. As such, withdrawal of this objection is respectfully requested.

**II. Rejection of Claims 1-5, 7-17, and 19-22 Under 35 U.S.C. §103(a)**

Claims 1-5, 7-17, and 19-22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Safranek et al. (US 2004/0193755) in view of Kondratiev et al. (US 6,922,740). It is respectfully submitted that this rejection should be withdrawn for at least the following reasons. Safranek *et al.* and Kondratiev *et al.*, alone or in combination, do not teach each and every element of applicants' invention as recited in the subject claims.

To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP §706.02(j). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

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Independent claim 1 (and similarly independent claims 14, 17, 21 and 22) recites *an access data store that stores access information associated with memory, the access data store comprising an access table, the access table comprising a source identifier field, a memory address field and an access attribute field, the access attribute field distinguishes from amongst two or more of read, read and write, write, and no access to indicate access for a combination of source and memory range identified in the source identifier and memory address fields; and a memory controller that employs the access information to determine whether a requested direct memory access is permitted and rejects the requested direct memory access if it is not permitted.* As conceded in the Office Action, Sanfranek *et al.* does not teach or suggest the aforementioned novel aspects of applicant's invention as recited in the subject claims. The cited art discloses a method for preventing non-CPU devices from accessing protected memory. This is accomplished by maintaining a NODMA memory cache where each bit in the cache represents a page of memory. The setting of the bit (0 or 1) determines if the associated memory page is protected. If a memory access request for a page comes from a non-CPU device and the NODMA cache indicates that the page is protected, the access will be denied. However, this provides very fine control of memory pages, but lacks the combined source, memory, and access type control of the subject claim. Kondratiev *et al.* is cited to make up for the above noted deficiencies of Sanfranek *et al.* Kondratiev *et al.* teaches a system for controlling DMA access from devices. The cited art discloses a table that contains rows containing device ID, read memory range, write memory range and duration. This provides an access control list that indicates memory ranges a device is allowed to access. However, the table *only* indicates memory ranges that are allowed access. Moreover, read and write access are indicated in two separate fields. The access attribute in applicant's claimed invention provides both allowed and disallowed access information including access type within a single field. This provides allowed and disallowed control information to be stored together, as well as providing both types of information for a single device. For example, the table can have an entry for device A indicating read access for memory range X and another entry for device A indicating no access for memory range Z.

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Additionally, the Office action asserts that the claims 14, 17, 21 and 22, do not recite "access attribute in applicant's claimed invention provides both allowed and disallowed access information including access type within a single field." The arguments above do not claim that this specific limitation is recited, but that the recited limitation does provide for this feature. For example, claim 1 recites *the access attribute field (this is a single field) distinguishes from amongst two or more of read, read and write, write, (this indicates allowed access and the type of access) and no access (this indicates disallowed access) to indicate access for a combination of source and memory range identified in the source identifier and memory address fields.* Therefore, the limitation as recited does provide for both allowed and disallowed access information including access type within a single field. Kondratiev *et al.* and Sanfrank *et al.*, fail to teach or suggest the access attribute field *distinguishes from amongst two or more of read, read and write, write, and no access* to indicate access for a combination of source and memory range identified in the source identifier and memory address fields.

Accordingly, applicants' representative respectfully submits that Sanfrank *et al.* and Kondratiev *et al.*, alone or in combination, fail to teach or suggest all limitations of applicants' invention as recited in independent claims 1, 14, 17, 21 and 22 (and claims 2-5, 7-13, 15, 16, 19 and 20 that depend there from) and thus fails to make obvious the subject claimed invention. For this reason, this rejection should be withdrawn.

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**CONCLUSION**

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP553US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

AMIN, TUROCY & CALVIN, LLP

/Himanshu S. Amin/

Himanshu S. Amin

Reg. No. 40,894

AMIN, TUROCY & CALVIN, LLP  
24<sup>TH</sup> Floor, National City Center  
1900 E. 9<sup>TH</sup> Street  
Cleveland, Ohio 44114  
Telephone (216) 696-8730  
Facsimile (216) 696-8731